

## **REMARKS**

The Office Action of September 18, 2008 has been received and carefully reviewed. Reconsideration of the pending claims is respectfully requested in view of the above amendment and the following remarks.

### **I. IDS**

The information disclosure statement filed January 3, 2006 was rejected for failure to include copies of the non-patent literature documents shown in the corresponding form 1449. Applicants have been submitted herewith a supplemental IDS citing these non-patent literature references and including copies thereof whereby consideration of these references is respectfully requested.

### **II. DRAWINGS**

Fig. 1 was rejected for not including a 'prior art' designation. Applicants are filing herewith a replacement sheet in which Fig. 1 is revised to designate the figure as "PRIOR ART", whereby consideration and acceptance of the corrected Fig. 1 is respectfully requested.

### **III. SPECIFICATION**

The specification was rejected for use of "users U1 to UK" on page 6, line 26 and for including the phrase "computer 2" on page 7, line 17. In the above amendments, the phrase "users U1 to UK" has been changed to "users U01 to UOK" on page 6, line 26, and the phrase "computer 2" was changed to "computer 20" on page 7, line 17 whereby no new matter has been introduced into the subject application. Reconsideration and withdrawal of the rejection of the specification is therefore respectfully requested.

### **IV. REJECTIONS UNDER 35 U.S.C. §112**

Claim 4 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failure to particularly point out and distinctly claim the subject matter regarded as the invention. By the above amendment, claim 4 has been amended to depend from claim 3, which provides clear antecedent basis for the "said information

data" whereby claim 4 is now definite within the meaning of the second paragraph of 35 U.S.C. §112 and reconsideration and withdrawal of the rejection thereof is respectfully requested.

## **V. REJECTIONS UNDER 35 U.S.C. §103**

### **A. Claims 1, 2, 5-8, 14, and 16**

Claims 1, 2, 5-8, 14, 16 were rejected under 35 U.S.C. §103 as being unpatentable over Robbins 2002/0198657 in view of Walter "Flight Trials of the Wide-Area Augmentation System (WAAS)" and Lo "WAAS Performance in the 2001 Alaska Flight Trials of the High Speed Loran Data Channel.". Reconsideration and withdrawal of these rejections is respectfully requested for at least the following reasons.

#### **Claim 16**

Applicants note that the beginning of paragraph 2 on page 4 of the Office Action lists claim 16 as being rejected as obvious over Robbins in view of Walter and Lo, but that the remainder of this section of the Office Action (including paragraphs 2-20) fails to address claim 16. Moreover, Applicants note that the Office Action (correctly) concedes in paragraph 26 on page 11 of the Office Action that this proposed combination of Robbins with Walter and Lo does not teach the aspects of claim 16. Therefore, Applicants assume the Office Action inadvertently listed claim 16 in paragraph 2 on page 4 of the Office Action, and in any event respectfully submit that claim 16 is patentably distinct from the proposed combination of Robbins with Walter and Lo and request reconsideration and withdrawal of the rejection of claim 16 under 35 U.S.C. §103.

#### **Claims 1, 2, and 5-7**

Claim 1 and dependent claims 2 and 5-7 relate to a data server used in a system for supplying complementary augmentation data for satellite navigation user signals. The system includes at least one computer that determines the augmentation data from data transmitted by at least one receiver station receiving navigation information sent by at least one satellite. The server of claim 1 comprises a first input for receiving the

augmentation data transmitted by the computer, a first output for sending the augmentation data to at least one user, and a second output that retransmits the augmentation data to the computer with a predetermined time-delay relative to reception at the first input.

The Office Action proposes a 3-way combination of these references, in which the distribution system 110 is modified to provide an output to send the network correction data stream (NCS) to the network processor of the infrastructure subsystem 105, allegedly to provide a feedback loop per Walter, and the feedback loop of Walter is modified to provide a predetermined time-delay relative to reception of the NCS data at the distribution system 110.

The server of claim 1 and dependent claims 2 and 5-7 is non-obvious over the proposed combination of Robbins with Walter and Lo.

As acknowledged in the Office Action, the distribution system 110 provides no second output for the NCS data, and instead provides the data to the mobile equipment 115. Moreover, as acknowledged in the Office Action, there is no predetermined time-delay in the feedback loop of Walter.

With respect to motivation, the Office Action asserts that (1) “[i]t would be obvious ...to add the feedback loop taught in Walter to the data server and computer taught in Robbins *because monitoring the accuracy of an augmentation signal ensures that it is useful to end users*” (Office Action, page 5, emphasis added), and further that (2) “[i]t would be obvious ...to add a pre-determined time delay to the augmentation signal feedback loop ...because *this would result in similar calculations of the VPL between a space based augmentation system and a terrestrial based augmentation system.*” (Office Action, page 6, emphasis added).

The person of ordinary skill in the art would have no motivation or reasonable expectation of success to add a feedback loop to the system 100 of Robbins, and thus would not seek to add the claimed second output to the distribution system 110 in Robbins. Robbins does not appear to provide such a feedback loop, and there is no teaching or suggestion in Robbins for providing a second output to transmit the NCS data from the distribution system 110 back to the network processor. Clearly, sending the NCS data back to the network processor would add complexity and cost to the

system 100 of Robbins. Hence, without any additional benefit, a person of ordinary skill in the art would choose *not* to add the claimed second output to the distribution system 110 of Robbins. In this regard, Robbins illustrates and describes the operation of the Network Processor as including no feedback for the NCS data, for example, in Fig. 7 and the corresponding description.

Robbins also provides other means for *ensuring that the NCS data is useful to end users*. For example, network algorithms and other techniques are described in paragraphs [0054]-[0057] of Robbins below:

[0054] Network processor NP receives data from all reference stations in the composite data stream CDS and uses these data to estimate errors in the satellite ephemerides and clock polynomials broadcast by the GPS satellites. These errors are used along with modeled tropospheric and ionospheric delays to calculate corrections for pseudorange and delta-range made by the GPS receiver at the mobile equipment 115. *Before transmission from the network processor NP, corrections for each satellite are tested against measurements from all reference stations tracking that satellite.* If the residuals from that test are not satisfactory, the worst reference station is excluded, and the calculations are repeated without the excluded reference station. This process is iterated until either satisfactory correction data are obtained or the satellite is declared unusable. Warnings for satellites declared unusable can be transmitted in the NCS along with correction data for usable satellites for each epoch.

[0055] *The rate of change of the corrections is checked against the output intervals to exclude measurements from a failing satellite or downgrade the variance of the correction.* Thus, faulty reference stations, faulty measurements, and faulty GPS satellites are removed from the process automatically at each measurement epoch. Warnings for satellites removed in this manner are transmitted by the network processor along with correction data for usable satellites for each epoch.

[0056] *The measurement and computation epochs and latencies of the GPS reference network as described thus far have been found to support a 20-30 cm level of accuracy for real-time positioning and navigation with Selective Availability in effect.* The network algorithms remove most of the temporal de-correlation in GPS measurements. *Temporal de-correlation is managed by minimizing latency of the corrections.* Thus the major sources of error at the mobile equipment are multipath signals and receiver noise.

[0057] *Multipath can be controlled at the reference stations and at the mobile equipment by prudent siting of the GPS receiving*

antenna with respect to obvious reflecting surfaces, good antenna design, and multipath mitigation techniques within the GPS receiver. A high-quality, *precision GPS receiver makes low-noise measurements* of the GPS code and carrier phases.

(Robbins, paragraphs [0054]-[0057], emphasis added). Similarly, Robbins explains in paragraph [0084] that the mobile equipment can determine the validity of the NCS data, stating:

[0084] Each Type 5 message contains the issue of data ephemeris (iode, a key identifying the data being broadcast by the satellite). When a satellite changes its page, the iode also changes. *Mobile equipment using the NCS can compare the iode contained in the NCS message with the iode contained in signals being received directly from a satellite to determine whether a given set of NCS correction data is still valid or has become stale.* The Type 5 NCS message also includes satellite clock error data.

(Robbins, paragraphs [0084], emphasis added).

Therefore, the person of ordinary skill in the art would not seek to add more complexity to the algorithms in the network processor, nor would they attempt to add a second output to the distribution system 110 of Robbins, as the disclosed system 100 already includes other means for ensuring that the NCS data is useful to end users, and is described as achieving a “20-30 cm level of accuracy for real-time positioning and navigation with Selective Availability in effect”. Therefore, absent impermissible hindsight based on a reading of Applicant’s disclosure, the purported motivation in the Office Action for adding a feedback loop of Walters to the network processor and distribution system 110 of Robbins is erroneous and fails to satisfy the requirements of a *prima facie* showing of obviousness under 35 U.S.C. §103. For at least these reasons, therefore, claim 1 and dependent claims 2 and 5-7 are patentably distinct from the proposed combination of Robbins with Walter and Lo, and the rejections of these claims should be reconsidered and withdrawn.

Furthermore, even if Robbins were modified to add a feedback loop of Walters, the person of ordinary skill in the art would have no motivation or reasonable expectation of success in attempting to introduce a predetermined time-delay into such a feedback loop as per claim 1. Moreover, this proposed further

modification/combination with Lo provides no predictable advantageous results, and instead, the skilled artisan, upon considering these references in their entireties would instead conclude that introducing a predetermined delay into the system of Robbins would instead reduce or inhibit the functionality of the CDS processing in the network processor since Robbins describes the CDS processing as being time critical (e.g., see Robbins paragraphs [0099] and [0100], indicating that the process epoch operation cannot wait because a reference station has provided a measurement for the next epoch). Consequently, Robbins would be interpreted as teaching away from introducing a delay for incorporation of delayed NCS data verification, and the person of ordinary skill in the art would not see any predictable advantages to adding this further complexity, and instead would have not reasonable expectation of the proposed modification being operable. For these further reasons, therefore, no *prima facie* case of obviousness has been set forth, and the subject matter of claims 1, 2, and 5-7 is nonobvious over the proposed combination of Robbins with Walter and Lo. Moreover, dependent claims 2 and 5-7 recite further patentably distinguishing features which are not rendered obvious by the proposed combination of these references.

For all the above reasons, Applicants respectfully request that the rejections of these claims be reconsidered and withdrawn under 35 U.S.C. §103.

#### Claims 8 and 14

The system of independent claim 8 and dependent claim 14 has been amended to recite a data server that includes a first input for receiving the augmentation data transmitted by the computer, a first output for sending the augmentation data to at least one user, and a second output that retransmits the augmentation data to the computer with a predetermined time-delay relative to reception at the first input. For all the reasons discussed above in connection with claims 1, 2, and 5-7, the proposed combination of Robbins with Walter and Lo does not present a *prima facie* case of obviousness with respect to the server recited in amended independent claim 8 as a person of ordinary skill in the art would not choose to make the combination and Robbins instead appears to teach away from the proposed combination. Thus, claims 8 and 14 are patentably distinct from the proposed combination of Robbins with Walter

and Lo, whereby reconsideration and withdrawal of the rejections of these claims is respectfully requested under 35 U.S.C. §103.

**B. Claims 3, 4, and 16**

Claims 3, 4, 16 were rejected under 35 U.S.C. §103 as being unpatentable over Robbins in view of Walter and Lo and further in view of Eschenbach 6,529,830. Reconsideration and withdrawal of these rejections is respectfully requested for at least the following reasons.

Claims 3, 4, and 16 depend, respectively, from amended independent claims 1 and 8. As discussed above, the server and system of independent claims 1 and 8 are non-obvious with respect to the proposed 3-way combination of Robbins with Walter and Lo. The inclusion of Eschenbach fails to remedy the above-mentioned deficiencies of Robbins, Walter, and Lo, whereby dependent claims 3, 4, and 16 are patentably distinct from the proposed 4-way combination. For at least these reasons, therefore, no *prima facie* case of obviousness has been set forth with respect to claims 3, 4, and 16, and these claims are patentably distinct from the proposed combination of Robbins, Walter, Lo, and Eschenbach. Moreover, claims 3, 4, and 16 recite further patentably distinguishing features, whereby reconsideration and withdrawal of the rejections of these claims is respectfully requested under 35 U.S.C. §103.

**C. Claims 9-11**

Claims 9-11 were rejected under 35 U.S.C. §103 as being unpatentable over Robbins in view of Walter and Lo and further in view of applicant's admitted prior art and Ballard 6,078,960. Reconsideration and withdrawal of these rejections is respectfully requested for at least the following reasons. These claims depend from independent claim 8 discussed above, whereby claims 9-11 are themselves nonobvious over Robbins combined with Walter and Lo as proposed in the Office Action. Neither of the applicant's background (APA) and Ballard remedy the deficiencies of the proposed combination of Robbins, Walter, and Lo, whereby claims 9-11 are patentably distinct from Robbins in view of Walter and Lo and further in view of applicant's admitted prior art and Ballard 6,078,960. For at least this reason, no *prima facie* case of obviousness

has been set forth with respect to claims 9-11, and the rejections thereof should be reconsidered and withdrawn under 35 U.S.C. §103.

**D. Claims 12, 13, and 17**

Claims 12, 13, 17 were rejected under 35 U.S.C. §103 as being unpatentable over Robbins in view of Walter and Lo and further in view of Ballard. Reconsideration and withdrawal of these rejections is respectfully requested for at least the following reasons. Claims 12, 13, and 17 depend from independent claim 8. As discussed above, Robbins, Walter, and Lo do not render claim 8 obvious. Ballard, moreover, fails to remedy the deficiencies of the proposed combination of Robbins, Walter, and Lo. For at least this reason, therefore, the Office Action fails to establish a *prima facie* obviousness showing with respect to claims 12, 13, and 17 and the claims are patentably distinct from the proposed combination of Robbins with Walter, Lo, and Ballard. Furthermore, claims 12, 13, and 17 recite further patentably distinct features. Accordingly, reconsideration and withdrawal of the rejections of these claims is respectfully requested under 35 U.S.C. §103.

**E. Claim 15**

Claim 15 was rejected under 35 U.S.C. §103 as being unpatentable over Robbins in view of Walter and Lo and further in view of Toran-Marti et. al (F. Toran-Marti, J. Ventura-Traveset, J. C. de Mateo, "Satellite Navigation & the Internet," Dr. Dobb's Journal, Mar., pp. 17-26, 2002). Reconsideration and withdrawal of these rejections is respectfully requested for at least the following reasons. This claim depends from claims 8 and 14 discussed above in connection with Robbins, Walter, and Lo. Toran-Marti fails to remedy the above-mentioned deficiencies of the proposed combination of Robbins, Walter, and Lo, and claim 15 recites further patentably distinct features, whereby dependent claim 15 is patentably distinct from the proposed 4-way combination of Robbins, Walter, Lo, and Toran-Marti and no *prima facie* case of obviousness has been set forth in the Office Action with respect to this claim. For at least these reasons, therefore, reconsideration and withdrawal of the rejection of claim 15 is respectfully requested under 35 U.S.C. §103.

### **CONCLUSION**

For at least the above reasons, reconsideration of the currently pending claims is respectfully requested.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Should any fees be due as a result of the filing of this response, the Commissioner is hereby authorized to charge the Deposit Account Number 06-0308, LUTZ200700.

Respectfully submitted,

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